

CITY OF  
LONG BEACH

# CAAP

June 2<sup>nd</sup>, 2018

CLIMATE ACTION  
+ ADAPTATION PLAN



# What is the CAAP?

**Long Beach is developing its first ever Climate Action and Adaptation Plan (CAAP), and we need your help!**

- ▶ What is climate action/mitigation?
- ▶ What is climate adaptation?
- ▶ What is a CAAP? A plan to:
  - Reduce greenhouse gas (GHG) emissions
  - Prepare the community for the impacts of climate change
  - Improve the quality of life
  - Enhance economic vitality in Long Beach







# CAAP Goals – *Small Change, Big Impact*

- ▶ Distinguish Long Beach as a leader in climate mitigation and adaptation planning
- ▶ Meet applicable local, state, and other requirements
- ▶ Be an actionable plan (right balance of innovation and practicality)
- ▶ Create a healthier community by addressing climate change
- ▶ Create a more prosperous community by addressing climate change
- ▶ Consider economic, social, and environmental co-benefits holistically





# CAAP Goals – *Small Change, Big Impact*

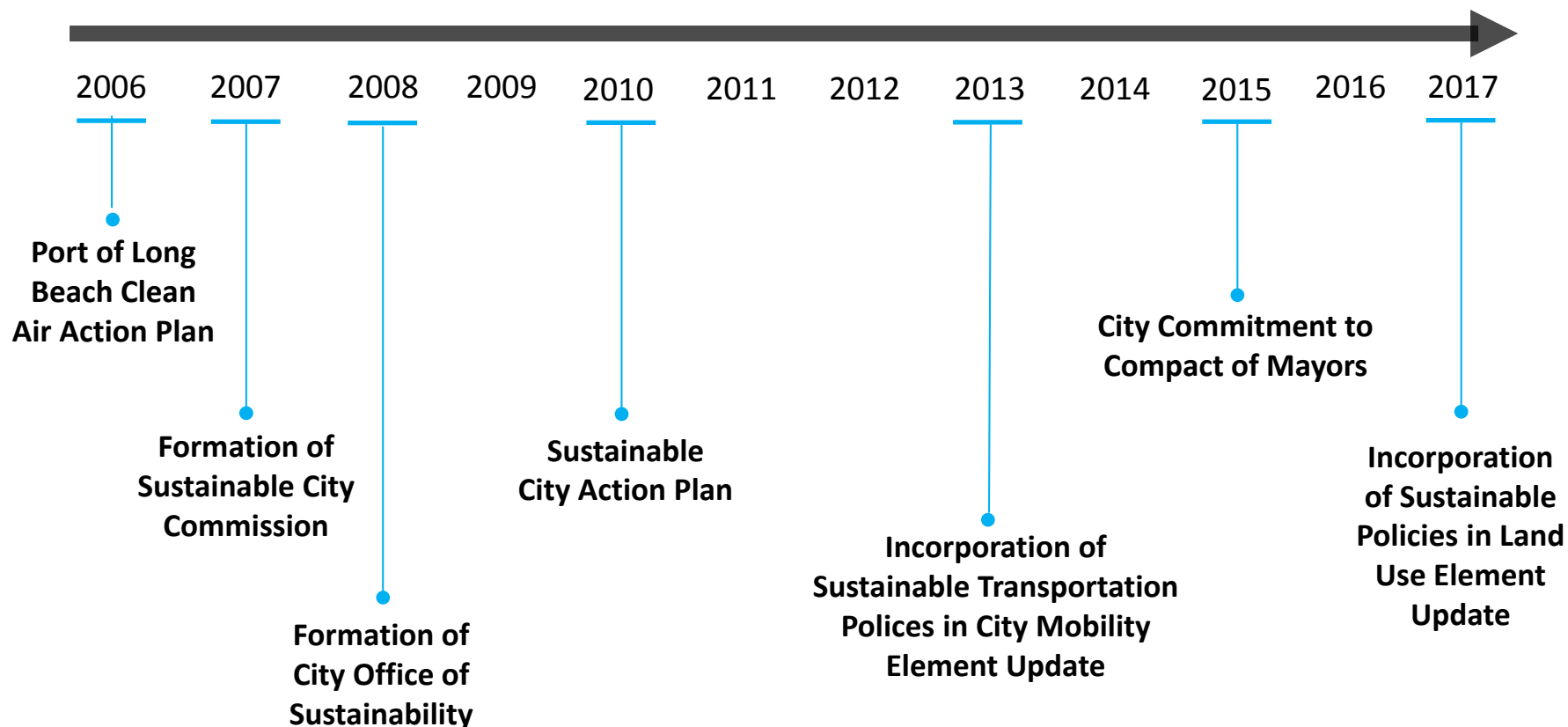
- ▶ Be inclusive of the entire community, including vulnerable populations
- ▶ Empower young people to be leaders in creating a most sustainable community
- ▶ Pre-position Long Beach for grant opportunities
- ▶ Invoke personal sense of responsibility among residents and businesses
- ▶ Build off existing initiatives such as livability
- ▶ Create a public-friendly, easily digestible document





# Building on Historical Achievements

## Timeline of Long Beach Sustainability and Resilience Accomplishments





# CAAP Development Process

## ► Technical Work Nearly Complete:

- Technical analyses required as a basis of data and facts for developing a CAAP
- Components:
  - GHG inventory
  - Vulnerability assessment of critical assets (roads, bridges, parks, etc.)

## ► Preliminary outreach conducted:

- Scientific Working Group
  - Validate the methodology, provide local data
  - 13 independent experts from: CSULB, LBCC, UCLA, Aquarium of the Pacific, AQMD, RAND
- City departments
- Business Working Group
- Community Working Group







# CAAP Development Process

## ► Looking ahead:

- Remaining technical analysis (GHG forecast, target-setting, mitigation/adaptation development)
- Yearlong ongoing community engagement to develop the CAAP
  - Draft outreach plan being refined to reflect lessons learned from LUE
  - Equity analysis of draft outreach plan
  - Multiple events in each Council District addressing local communities and issues
  - Surveying, focus groups to understand community priorities and interests
  - Online engagement (#climateactionlb)
- Draft plan
- Community feedback on draft plan (open house #2 in Fall 2018)
- Adoption process

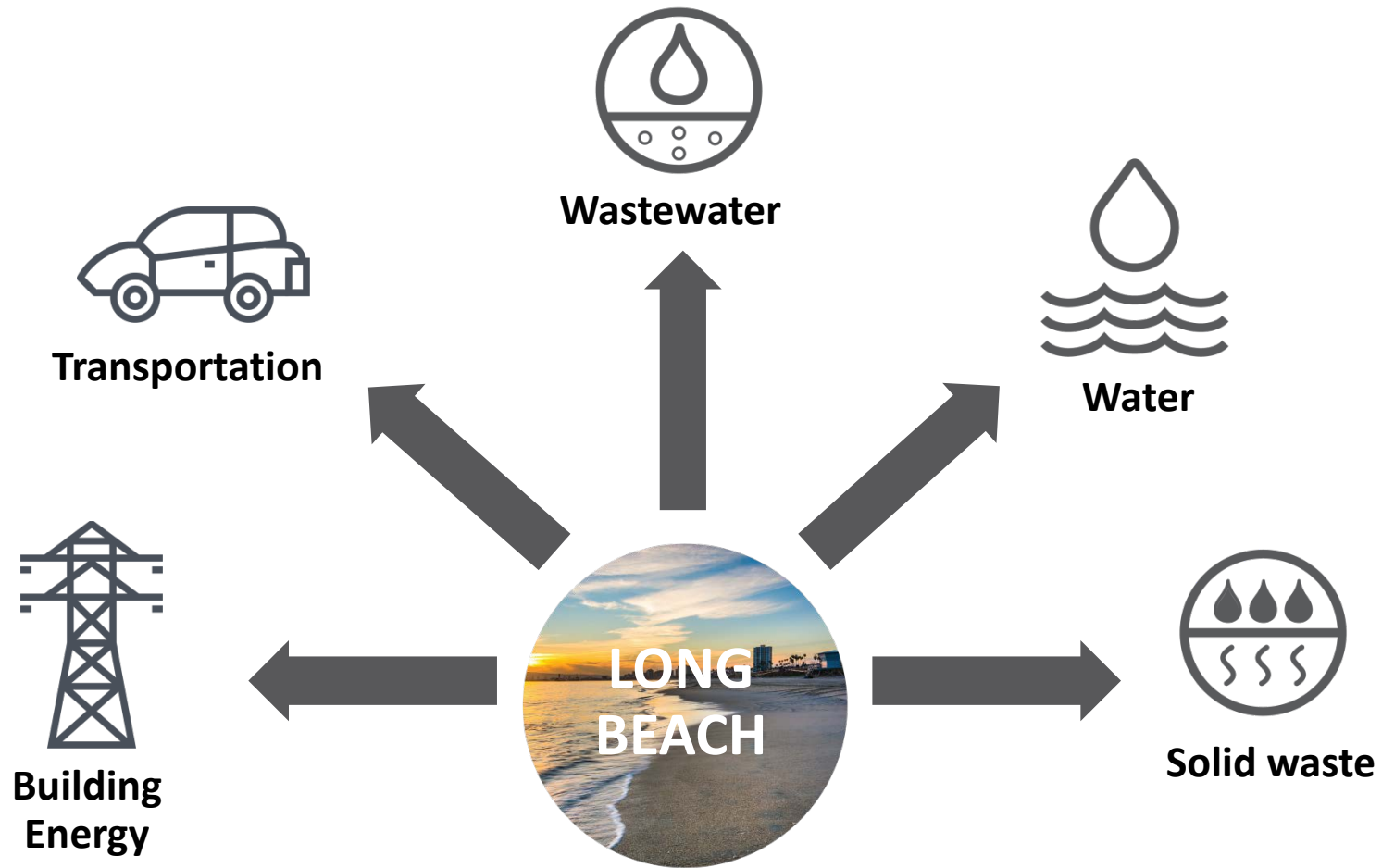
# Climate Mitigation Planning Process



GHG = Greenhouse Gas



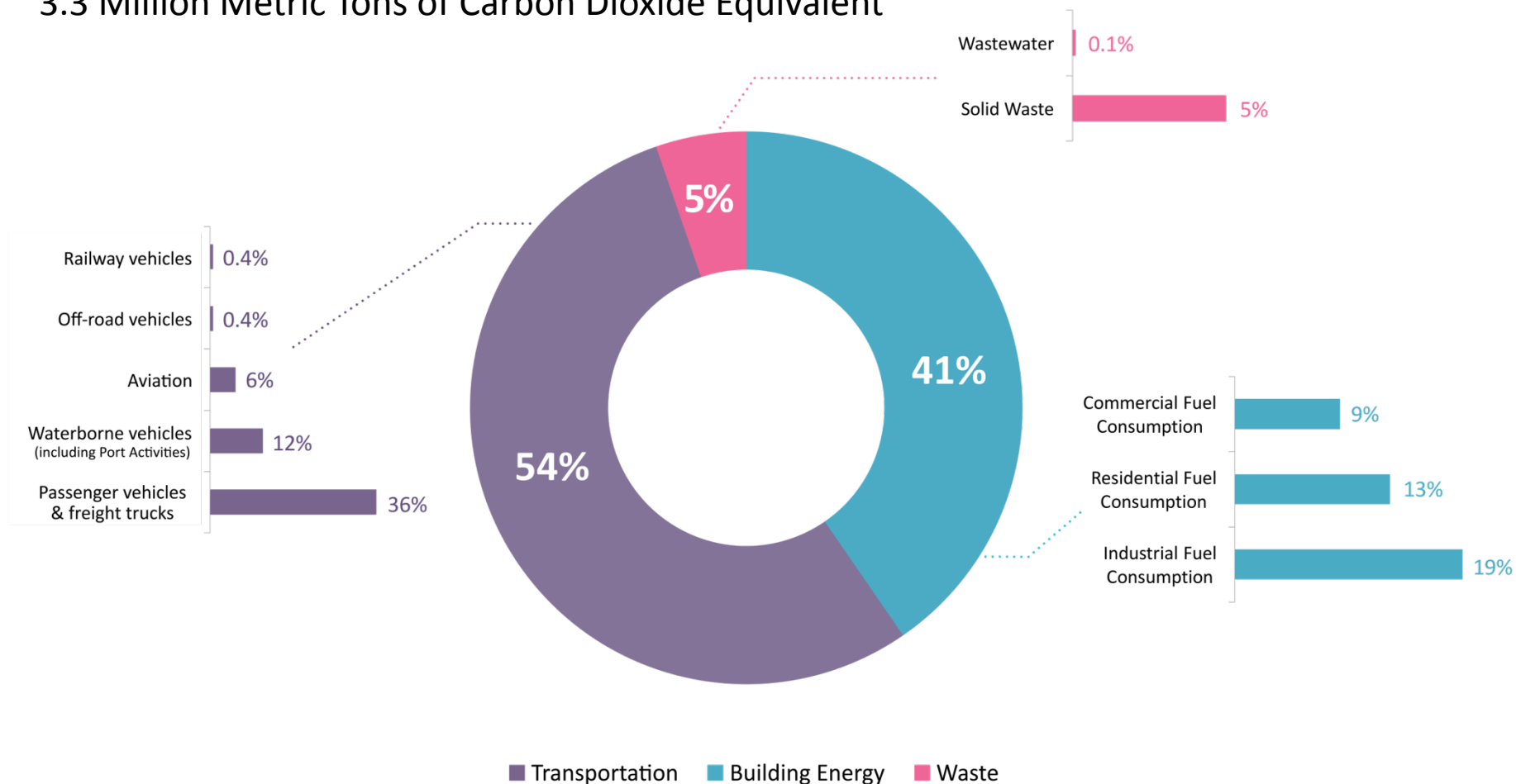
# Emissions Generating Sectors in Long Beach





# Communitywide GHG Emissions by Sector

**Total Communitywide Emissions:**  
3.3 Million Metric Tons of Carbon Dioxide Equivalent



# GHG Emissions Inventory Methodology

## The Inventory followed the BASIC Reporting Standard of the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC Protocol)

- ▶ Globally recognized standard for reporting community-scale emissions
- ▶ Covers emissions from the following sectors
  - Commercial, residential and industrial building energy and fugitive emissions
  - Transportation
  - Solid waste
  - Water/Wastewater





# GHG Emissions Inventory – Data and Sources

## Building Energy Activity Data

- Residential, commercial, and industrial electricity and natural gas consumption
- Other industrial fuel consumption
- Fugitive emissions from energy generation

## Transportation Activity Data

- On-road vehicle miles travelled
- Fuel consumed by off-road vehicles
- Fuel consumed by aviation industry
- Fuel consumed by waterborne vehicles (including Port of Long Beach activities)
- Fuel consumed by rail

## Waste Activity Data

- Tonnage of waste sent to landfills or incineration facilities by type
- Amount of wastewater produced and treated by treatment type

### Sources

- Southern California Edison
- U.S. Environmental Protection Agency
- California Air Resources Board
- City of Long Beach Gas and Oil Department

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- Southern California Association of Governments
- California Air Resources Board
- Southern California Edison
- Union Pacific Railway
- BNSF Railway
- Los Angeles Department of Water and Power
- U.S. Environmental Protection Agency
- Port of Long Beach
- Long Beach Airport

### Sources

- CalRecycle
- U.S. Environmental Protection Agency
- Los Angeles County Sanitation District
- City of Long Beach

# Next Steps in Climate Mitigation Planning



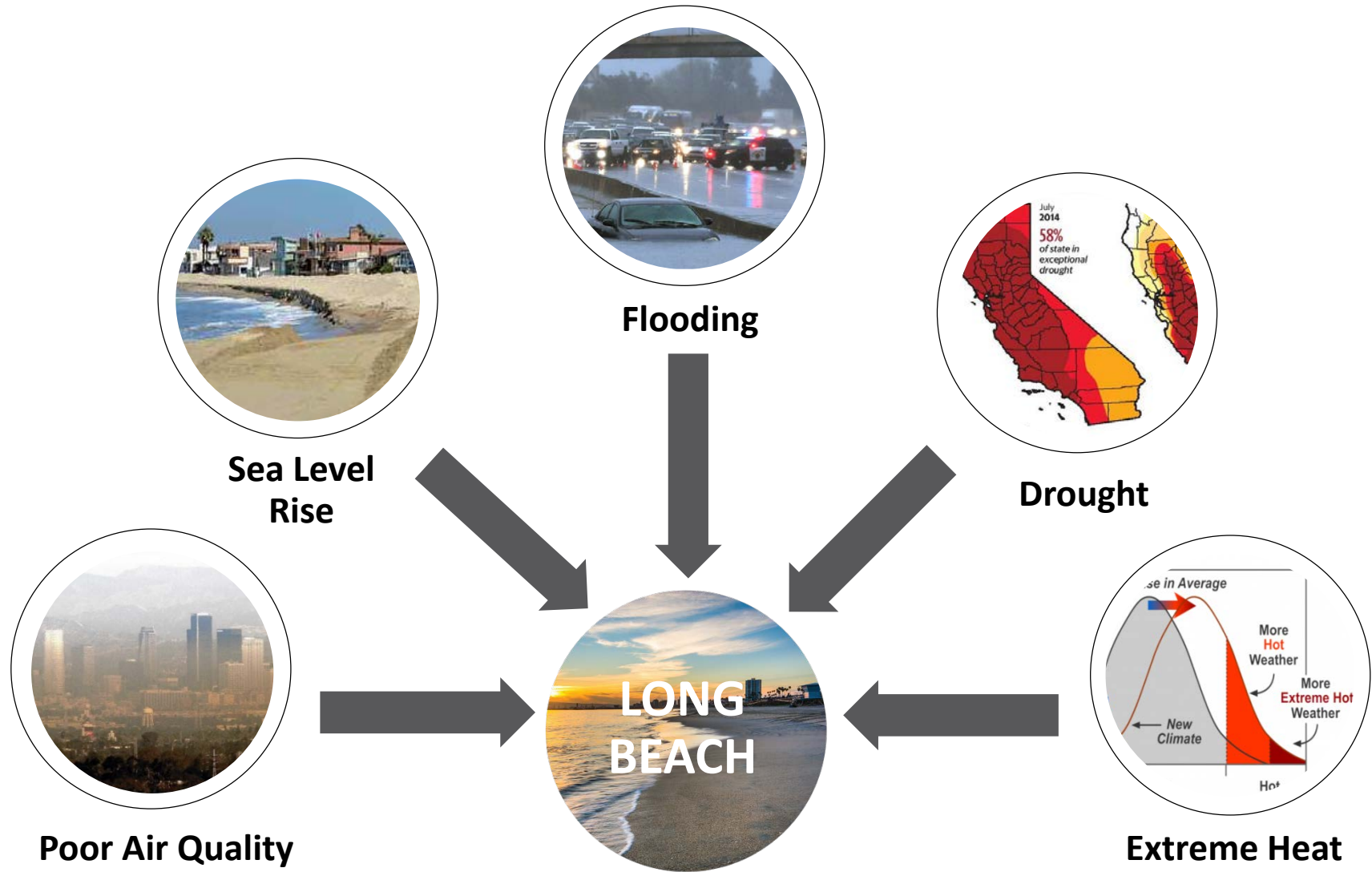
- ▶ Developing a forecast of GHG emissions
- ▶ Setting an ambitious and tailored GHG emissions reduction target
- ▶ Developing actions to meet target  
(see boards for suggestions and provide your feedback)

# Climate Adaptation Planning Process





# Climate Hazards Likely to Impact Long Beach





# Climate Projections for Long Beach

Sea Level Rise	<u>Mid-Century (~2030 - 2050)</u> <ul style="list-style-type: none"><li>• Projection 11.2 ± 3.5 inches<sup>1</sup></li></ul>	<u>End-of-Century (~2100)</u> <ul style="list-style-type: none"><li>• Projection 36.7 ± 9.8 inches (mid-range)<sup>1</sup></li><li>• 66 to 80 inches (high-range)<sup>2</sup></li></ul>
	<ul style="list-style-type: none"><li>• Higher storm tides, more extensive inland flooding, and increased coastal erosion during storm events due to higher sea levels</li></ul>	
Precipitation	<u>Mid-Century (~2030 - 2050)</u> <ul style="list-style-type: none"><li>• +6% to + 11% avg. annual precipitation in Long Beach<sup>3</sup></li></ul>	<u>End-of-Century ( ~2100)</u> <ul style="list-style-type: none"><li>• 1% to +25% avg. annual precipitation in Long Beach<sup>3</sup></li></ul>
	<ul style="list-style-type: none"><li>• Increase in intensity of precipitation events</li><li>• High year-to-year variability in annual precipitation to continue under climate change</li></ul>	

<sup>1</sup>Primary Source: USGS COSMOS Model

<sup>2</sup>California SLR Guidance

<sup>3</sup>Cal-Adapt



# Climate Projections for Long Beach

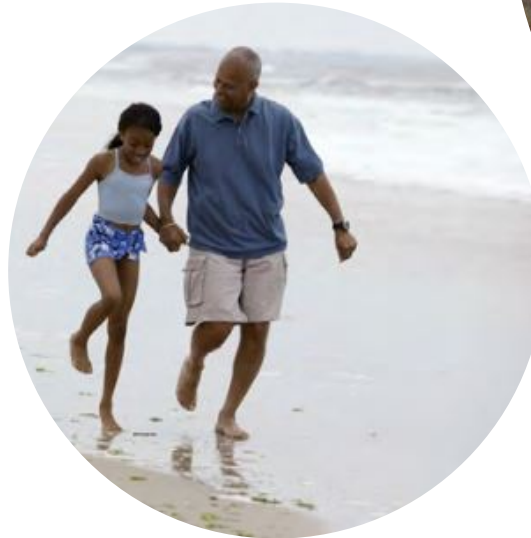
Extreme Heat	Mid-Century (~2030 - 2050)	End-of-Century ( ~2100)
	<ul style="list-style-type: none"><li>+7 to +12 extreme heat days (&gt;95F) in Long Beach<sup>1</sup></li></ul>	<ul style="list-style-type: none"><li>+7 to +33 extreme heat days (&gt;95F) in Long Beach<sup>1</sup></li></ul>
	<ul style="list-style-type: none"><li>Heat waves will occur more frequently, be more intense, and longer-lasting</li><li>More humid heat waves with less cooling at night</li></ul>	
Drought	<ul style="list-style-type: none"><li>Overall regional drying trend with longer and more frequent droughts</li><li>Higher temperatures leading to higher water demand</li><li>Reduced snowpack and increased intensity of runoff events in watersheds that supply water to Long Beach</li></ul>	
Air Quality	<ul style="list-style-type: none"><li>Higher temperatures will increase air pollution formation</li><li>Increase in wildfire and energy consumption could worsen air quality</li><li>Higher temperatures, precipitation change, and increasing CO<sub>2</sub> concentrations are expected to increase pollen &amp; some airborne allergens</li><li>Climate change may negatively impact indoor air quality through the growth and spread of pests, infectious agents, and disease vectors</li></ul>	

<sup>1</sup>Cal-Adapt



# Community and Infrastructure Assets

- Coastal Resources
- Housing & Neighborhoods
- Parks and Open Space
- Transportation
- Energy
- Wastewater/Stormwater
- Water Supply
- Public Health



# Vulnerability Assessment Summary for Buildings



*Preliminary information; subject to change*

- ▶ With 11 inches of future SLR, Fire Station 21 and the Marine Safety Division facilities on Marina Drive are expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ Fire Station 24 and the Southeast Resource Recovery Facility on Pier South Avenue are expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ The Marine Patrol and Alamitos Bay Marina on Marina Drive are expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ The Leeway Sailing and Aquatics Center on East Ocean Boulevard are expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ Several community buildings/facilities are located in the 500-year riverine floodplain (see Precipitation-based Flooding Board).
- ▶ Buildings may require additional energy for cooling due to an increase in extreme heat.



# Vulnerability Assessment Summary for Parks



*Preliminary information; subject to change*

- ▶ With 11 inches of future SLR, approximately 50 percent of Rosie's Dog Beach is expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ Approximately 20 percent of the Marine Stadium is expected be flooded during King Tides. Approximately 100 percent of the Marine Stadium is expected to be flooded during a 100-Year Storm Tide.
- ▶ Approximately 40 percent of Colorado Lagoon is expected be flooded during King Tides. Approximately 50 percent of Colorado Lagoon is expected to be flooded during a 100-Year Storm Tide.
- ▶ Approximately 100 percent of Treasure Island, the Lookout, and Overlook parks are expected to be flooded during a 100-Year Storm Tide.
- ▶ Approximately 11 percent of Marine Park and Mothers Beach are expected be flooded during King Tides. Approximately 80 percent of Marine Park and Mothers Beach are expected to be flooded during a 100-Year Storm Tide.
- ▶ Vegetation in Parks & Open space may be impacted by extreme heat and drought, but functionality of the parks is unlikely to be impacted.



# Vulnerability Assessment Summary for Transportation Assets



- ▶ With 11 inches of future SLR, approximately 8 miles of roads are expected to be flooded during King Tides.
- ▶ Approximately 50 miles of roads are expected to be flooded during a 100-Year Storm Tide.
- ▶ Parts of the Alamitos Bay Channel Bridge touchdowns are expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ Extreme heat may result in an increase in damage due to asphalt pavement softening, particularly in areas of high truck traffic.

*Preliminary information; subject to change*

# Vulnerability Assessment Summary for Energy Assets



- ▶ Approximately 1 mile of natural gas main lines are expected to be flooded during King Tides. Approximately 26 miles of natural gas main lines are expected to be flooded during a 100-Year Storm Tide.
- ▶ Approximately 8 miles of transmission lines are expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ The Seabright electrical substation is expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ Extreme heat may increase energy demand and could result in brownout if demand exceeds supply.

*Preliminary information; subject to change*

# Vulnerability Assessment Summary for Wastewater Assets

- ▶ Approximately 24 miles of sewer main lines are expected to be flooded during a 100-Year Storm Tide.
- ▶ The Long Beach Water Reclamation Plant is not located within areas exposed to sea level rise and storm surge\*
- ▶ Extreme heat events may cause minor increase in odor impacts.
- ▶ If electrical outages result from area-wide brownouts, sewer pumps will be disrupted, unless they are connected to backup generators.

\*The Joint Water Pollution Control Plant is located outside of Long Beach, and further study is recommended.

*Preliminary information; subject to change*



# Vulnerability Assessment Summary for Stormwater Assets



- ▶ The stormwater pump station on Appian Way is expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ Additional modeling needed to understand the potential flooding impact from combined SLR, storm surge, and precipitation-based flooding events.

*Preliminary information; subject to change*

# Vulnerability Assessment Summary for Potable Water Assets



- ▶ Potable facilities owned and operated by LADWP on Ocean Boulevard are expected to be flooded during both King Tides and a 100-Year Storm Tide.
- ▶ Over 20 potable facilities are located in the 500-year floodplain.
- ▶ Drought may impact the provision of water services due to constrained water supply.

*Preliminary information; subject to change*



# Vulnerability Assessment Summary for Public Health

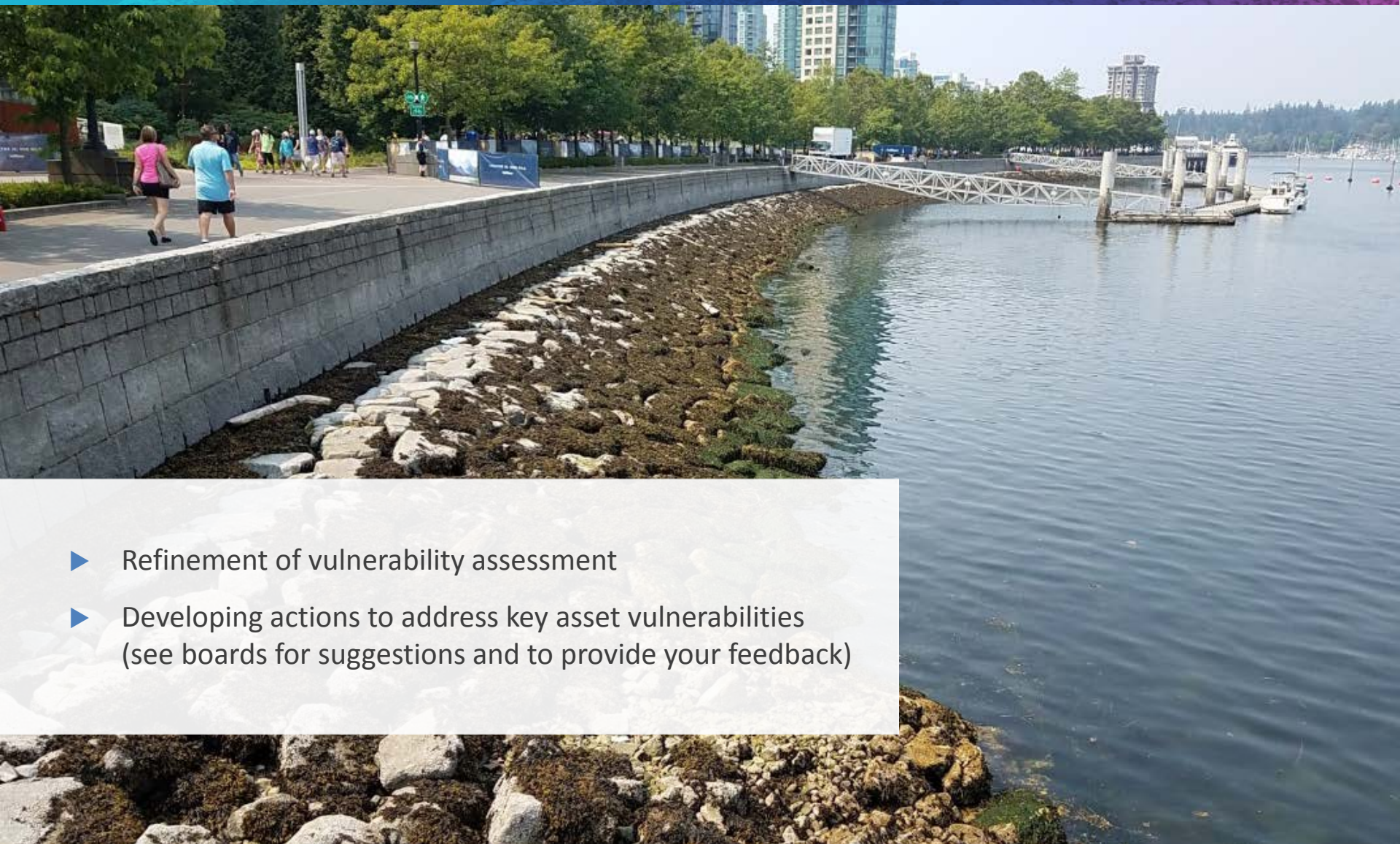


- ▶ Climate change is already impacting our health, and health impacts will continue to worsen
- ▶ Sea level rise, coastal flooding, and precipitation based flooding may result in injury, death, displacement, and mental health burden.
- ▶ The Southeastern neighborhoods have a higher share of elderly residents and are more vulnerable to flooding.
- ▶ North, Central, and West Long Beach have the lowest amounts of greenspace and high urban heat island effect, which can further stress existing health conditions during extreme heat events.
- ▶ West and North Long Beach are more vulnerable to poor air quality and have higher levels of hospitalizations for asthma.

*Preliminary information; subject to change*



# Next Steps in Adaptation Planning



- ▶ Refinement of vulnerability assessment
- ▶ Developing actions to address key asset vulnerabilities (see boards for suggestions and to provide your feedback)



# Learn More, Get Involved, Share Ideas!



- ▶ Visit our website for more info on the project:  
<http://www.lbds.info/climateactionlb/default.asp>
- ▶ #ClimateActionLB
- ▶ Sign-up for alerts on any of these projects via LinkLB (see website)
- ▶ Ideas? Suggestions?  
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